

CLAIMS

1. (Original) An extended polycrystalline superconductor, e.g. a supercon-
ducting tape, wire, or foil,
5 *characterized by*
 - at least two substrates,
 - each said substrate having deposited thereon a superconducting layer,
preferably on a buffer layer on said substrate, and
 - an extensive superconducting contact established between the surfaces of
10 said superconducting layers and extending over at least a fraction of $f = 0.3$
of the length and width of said superconductor.
2. (Original) An extended polycrystalline superconductor, e.g. a supercon-
ducting tape, or wire, or foil, *characterized by*
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 - a length of at least 1 m, preferably several m,
 - a substrate having deposited thereon at least one superconducting layer,
preferably on a buffer layer on said substrate, and
 - an extensive superconducting contact established between the surface(s) of
said superconducting layer(s) and extending over at least a fraction of
20 $f = 0.3$ of the length and width of said superconductor,
 - at least one of said superconducting layers comprising a compound belong-
ing to the $\text{ReBa}_2\text{Cu}_3\text{O}_{7-\delta}$ family, Re being a rare earth including
La or Y.
- 25 3. (Currently Amended) The superconductor according to claim 1, wherein
the superconductor comprises at least two superconducting layers depos-
ited on opposing sides of at least one substrate.
- 30 4. (Currently Amended) The superconductor according to claim 1, wherein
the superconductor is rolled, folded or twisted such that the surface(s) of
the superconducting layer(s) provide the desired extensive superconduct-
ing contact.

5. (Currently Amended) The superconductor according to claim 1, wherein the superconducting layers in contact are of preferably different lengths or widths and said contact extends at least over a fraction of about $f = 0.5$ of the length and width of one of said superconducting layers.
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6. (Original) The superconductor according to claim 1, wherein the length of said superconductor is at least 1 m, preferably several m.
- 10 7. (Currently Amended) The superconductor according to claim 1, wherein the grains in at least one superconducting layer are aligned so that low-angle grain boundaries are obtained.
- 15 8. (Currently Amended) The superconductor according to claim 1, wherein the average length of the grains in at least one superconducting layer exceeds their average width by at least a factor of 1.5.
9. (Currently Amended) The superconductor according to claim 1, wherein at least one of the superconducting layers consists of a heterostructure.
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10. (Original) The superconductor according to claim 9, wherein the heterostructure includes at least one doping film.
11. (Currently Amended) The superconductor according to claim 1, wherein the superconducting contact is established by pressing the superconducting layers together with mechanical means.
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12. (Currently Amended) The superconductor according to claim 1, wherein the superconducting contact is established by sintering and/or soldering the superconducting layers together.
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13. (Currently amended) The superconductor according to claim 1, *wherein* the superconducting contact is established by welding the superconducting layers together.
- 5 14. (Currently Amended) The superconductor according to claim 12, *wherein* the superconducting contact is established while pressure is applied.
- 10 15. (Currently Amended) The superconductor according to claim 11, *wherein* the superconducting contact is established by providing an intermediate layer, particularly an intermediate layer deposited onto at least one of the superconducting layers.
- 15 16. (Original) The superconductor according to claim 15, *wherein* the intermediate layer comprises a powder deposited onto at least one of the superconducting layers.
- 20 17. (Currently Amended) The superconductor according to claim 1, *wherein* at least one of the substrates is removed before establishing the superconducting contact between the surfaces of the superconducting layers.
- 25 18. (Currently Amended) The superconductor according to claim 1, *wherein* at least one superconducting layer is separated into pieces before establishing the superconducting contact.
- 30 19. (Currently Amended) The superconductor according to claim 1, *wherein* at least one of the superconducting compounds used in any of the superconducting layers is a cuprate.
20. (Original) The superconductor according to claim 1, *wherein* at least one of the superconducting compounds used in any of the superconducting layers belongs to the $\text{ReBa}_2\text{Cu}_3\text{O}_{7-\delta}$ family, Re being a rare earth including La or Y.

21. (Original) The superconductor according to claim 20, *wherein*

- metallic substrates are provided,
- the superconducting compound of the $\text{ReBa}_2\text{Cu}_3\text{O}_{7-\delta}$ family is deposited on both sides of said substrates, preferably onto buffer layers, and
- at least two of these substrates carrying superconducting layers are mounted on top of each other over at least a third of their length or width.

22. (Original) A method for making an extended superconductor, e.g. a wire, tape, or foil,

characterized by

- depositing at least two superconducting layers onto at least one substrate, preferably onto an intermediate buffer layer on said substrate,
- establishing an extensive superconducting contact between the surfaces of said superconducting layers, said superconducting contact extending over at least a predetermined fraction of the length and width of said superconducting layers.

23. (Original) A method for making an extended superconductor, e.g. a wire, tape, or foil,

characterized by

- providing at least one substrate of a length of at least 1 m, preferably several m,
- depositing at least one superconducting layer onto said substrate, preferably onto an intermediate buffer layer on said substrate,
- rolling, folding and/or twisting said at least one substrate for establishing an extensive superconducting contact between the surfaces of said superconducting layer(s), said superconducting contact extending over at least a predetermined fraction of the length and width of said superconducting layer(s),
- at least one of said superconducting layers comprising a compound belonging to the $\text{ReBa}_2\text{Cu}_3\text{O}_{7-\delta}$ family, Re being a rare earth including La or Y.

24. (Original) The method for making a superconductor according to claim 23, *wherein*

- a single substrate is used,
- 5 • said substrate is rolled, folded or twisted such that one part of the superconducting layer contacts another part of the same or another superconducting layer to establish the desired extensive superconducting contact between the surfaces of said superconducting layers.

10 25. (Currently Amended) The method for making a superconductor according to claim 22, *wherein*

the superconducting layer is obtained by

- depositing a superconducting compound onto a substrate, preferably onto a buffer layer on said substrate, thus producing a multilayer and
- 15 • subsequently separating or splicing the multilayer obtained this way.